CLAIMS

What is claimed is:

1. A transformer assembly for a microwave oven having a magnetron, comprising:

a transformer to apply voltage to the magnetron of the microwave oven;

a container receiving the transformer therein and having a base plate coupled to the microwave oven and a cover body coupled to the base plate; and

a cooling material contained in the container to cool the transformer.

2. The transformer assembly of claim 1, wherein the cooling material is mineral oil.

3. The transformer assembly of claim 1, wherein the container has an inner surface with at least two points having different distances from a center of the container.

4. The transformer assembly of claim 1, wherein the container is made of aluminum or copper.

5. The transformer assembly of claim 1, wherein the transformer and the base plate are attached to each other by spot welding.

6. The transformer assembly of claim 1, wherein the cover body and the base plate are attached to each other by brazing.

7. The transformer assembly as set forth in claim 1, wherein the base plate comprises:

a base part defining a bottom of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part outwardly with the base part being separated from the mounting parts, to fasten the base plate to the microwave oven.

8. The transformer assembly of claim 1, wherein the base plate comprises:

a base part defining a bottom of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part inwardly with the base part being separated from the mounting parts, to fasten the base plate to the microwave oven.

9. The transformer assembly of claim 1, further comprising:

an input line;

an output line;

a primary winding of the transformer connected to an external power source via the input line;

a secondary winding of the transformer to output electric current, transformed by electromagnetic induction induced by the primary winding, to the magnetron via the output line; and

a terminal unit attached to the cover body to allow the input line and the output line to be connected to the external power source and the magnetron, respectively.

10. The transformer assembly of claim 9, wherein the terminal unit has block terminals.

11. A transformer assembly for a microwave oven having a magnetron, comprising:

a transformer to apply voltage to the magnetron of the microwave oven;

a container receiving the transformer;

a cooling material contained in the container to cool the transformer; and

a bracket attached to a surface of the container to install the container in the microwave oven.

12. The transformer assembly of claim 11, wherein the transformer, the surface of the container, and the bracket are attached to one another by spot welding.

13. The transformer assembly of claim 11, wherein the container comprises a base plate and a cover body coupled to the base plate by brazing.

14. The transformer assembly of claim 11, wherein the bracket comprises:

a base part attached to the surface of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part outwardly with the base part being separated from the mounting parts, to fasten the bracket to the microwave oven.

15. The transformer assembly of claim 11, wherein the bracket comprises:

a base part attached to the surface of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part inwardly with the base part being separated from the mounting parts, to fasten the bracket to the microwave oven.

16. The transformer assembly of claim 11, further comprising:

an input line;

an output line;

a primary winding of the transformer connected to an external power source via the input line;

a secondary winding of the transformer to output electric current, transformed by electromagnetic induction caused by the primary winding, to the magnetron via the output line; and

a terminal unit attached to the cover body to allow the input line and the output line to be connected to the external power source and the magnetron, respectively.

17. The transformer assembly of claim 16, wherein the terminal unit has block terminals.

18. A microwave oven, comprising:

a cooking chamber;

an electrical components area isolated from the cooking chamber;

a magnetron installed in the electrical components area to generate microwaves into the cooking chamber;

a transformer to apply voltage to the magnetron;

a container receiving the transformer and having a base plate and a cover body coupled to the base plate; and

a cooling material contained in the container to cool the transformer.

19. The microwave oven of claim 18, wherein the cooling material is mineral oil.

20. The microwave oven of claim 18, wherein the container has an inner surface with at least two points having different distances from a center of the container.

21. The microwave oven of claim 18, wherein the container is made of aluminum or copper.

22. The microwave oven of claim 18, wherein the transformer and the base plate are attached to each other by spot welding.

23. The microwave oven of claim 18, wherein the cover body and the base plate are attached to each other by brazing.

24. The microwave oven of claim 18, wherein the base plate comprises:

a base part defining a bottom of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part outwardly with the base part being separated from the mounting parts, to fasten the base plate to the microwave oven.

25. The microwave oven of claim 18, wherein the base plate comprises:

a base part defining a bottom of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part inwardly with the base part being separated from the mounting parts, to fasten the base plate to the microwave oven.

26. The microwave oven of claim 18, further comprising:

an input line;

an output line;

a primary winding of the transformer connected to an external power source via the input line;

a secondary winding of the transformer to output electric current, transformed by electromagnetic induction caused by the primary winding, to the magnetron via the output line; and

a terminal unit attached to the cover body to allow the input line and the output line to be connected to the external power source and the magnetron, respectively.

27. The microwave oven of claim 26, wherein the terminal unit has block terminals.

28. A microwave oven, comprising:

a cooking chamber;

an electrical components area isolated from the cooking chamber;

a magnetron installed in the electrical components area to generate microwaves into the cooking chamber;

a transformer to apply voltage to the magnetron;

a container receiving the transformer;

a cooling material contained in the container to cool the transformer; and

a bracket attached to a surface of the container to install the container in the machine room.

29. The microwave oven of claim 28, wherein the transformer, the surface of the container, and the bracket are attached to one another by spot welding.

30. The microwave oven of claim 28, wherein the container comprises a base plate and a cover body coupled to the base plate by brazing.

31. The microwave oven of claim 28, wherein the bracket comprises:

a base part attached to the surface of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part outwardly with the base part being separated from the mounting parts, to fasten the bracket to the microwave oven.

32. The microwave oven of claim 28, wherein the bracket comprises:

a base part attached to the surface of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part inwardly with the base part being separated from the mounting parts, to fasten the bracket to the microwave oven.

33. The microwave oven of claim 28, further comprising:

an input line;

an output line;

a primary winding of the transformer connected to an external power source via the input line;

a secondary winding of the transformer to output electric current, transformed by electromagnetic induction caused by the primary winding, to the magnetron via the output line; and

a terminal unit attached to the cover body to allow the input line and the output line to be connected to the external power source and the magnetron, respectively.

34. A microwave oven, having an electrical components area comprising:

a transformer assembly having a transformer, a container receiving the transformer, and a cooling material in the container to cool the transformer; and

a fastening unit connected to the transformer assembly to install the transformer assembly in the electrical components area of the microwave oven, wherein a distance between a center line of the container and a center line of the fastening unit is less than a distance between the center line of the container and an outer circumferential surface of the container.

35. The microwave oven of claim 34, wherein the container comprises:

a base part defining a bottom of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each extension part outwardly with the base part being separated from the mounting parts,

wherein the fastening unit fastens the mounting parts to a bottom of the electrical components area.

36. The microwave oven of claim 35, wherein the transformer assembly has a bracket attached to a surface of the container, the bracket comprising:

a base part attached to the surface of the container;

extension parts at respective ends of the base part, formed by bending each end of the base part downwardly; and

mounting parts at respective ends of the extension parts, formed by bending the end of each of the extension parts with the base part being separated from the mounting part,

wherein the fastening unit fastens the mounting part to a bottom of the electrical components area.

37. A method of manufacturing a transformer assembly for a microwave oven, the transformer assembly having a sidewall, a base plate, a top plate, and a bracket, and a transformer with a coil and a core, the method comprising:

coupling an end of the sidewall to the base plate;

inserting the transformer into the sidewall and mounting the transformer on the base plate;

coupling the top plate to the other end of the sidewall to define a container; and

injecting oil into the container.

38. The method of claim 37, wherein said coupling the sidewall to the base plate comprises a brazing process.

39. The method of claim 37, wherein said mounting the transformer on the base plate comprises spot welding.

40. The method of claim 37, wherein said coupling the sidewall to the base plate comprises attaching the bracket to the base plate to install the base plate in the microwave oven, and said mounting the transformer on the base plate comprises combining the transformer, the base plate, and the bracket together.

41. The method of claim 37, wherein said coupling the top plate to the sidewall comprises installing input lines and output lines, through the top plate, connecting one end of the input lines to an external power source and the other end of the input lines to the transformer, connecting the output lines to the transformer to output electric current transformed by the transformer, and coupling the top plate with the input lines and the output lines installed thereto to the sidewall.

42. The method of claim 41, wherein said installing the input lines and the output lines comprises forming a through hole in the top plate, passing the input lines and the output lines through the through hole, and sealing the through hole with epoxy resin.

43. The method of claim 41, wherein said installing the input lines and the output lines comprises attaching a terminal unit to the top plate and connecting the input lines and the output lines to the terminal unit.

44. The method of claim 37, wherein said injecting the oil comprises forming an oil inlet in the top plate, injecting the oil into the container through the oil inlet, and sealing the oil inlet.

45. The method of claim 44, wherein said injecting the oil comprises injecting the oil until a level of the oil is between the top plate of the container and an upper end of the coil of the transformer.

46. The method of claim 44, wherein said injecting the oil comprises injecting the oil until a level of the oil is between an upper end of the core of the transformer and an upper end of the coil of the transformer.

47. The method of claim 37, further comprising preparing the sidewall having an inner surface with at least two points having different distances from a center of the container.

48. A method of manufacturing a transformer assembly for a microwave oven, the transformer assembly having a sidewall, a base plate, a top plate, and a bracket, and a transformer with a coil and a core, the method comprising:

coupling an end of the sidewall to the base plate;

inserting the transformer into the sidewall and mounting the transformer on the base plate to define a container;

injecting oil into the container defined by the sidewall and the base plate; and

coupling the top plate to the other end of the sidewall.

49. The method of claim 48, wherein said coupling the sidewall to the base plate comprises a brazing process.

50. The method of claim 48, wherein said mounting the transformer on the base plate comprises spot welding.

51. The method of claim 48, wherein said coupling the sidewall to the base plate comprises attaching the bracket to the base plate to install the base plate in the microwave oven, and said mounting the transformer on the base plate comprises combining the transformer, the base plate, and the bracket together.

52. The method of claim 48, wherein said coupling the top plate to the sidewall comprises installing input lines and output lines through the top plate to respectively provide external power to the transformer and output electric current transformed by the transformer, and coupling the top plate with the input lines and the output lines installed thereto to the sidewall.

53. The method of claim 52, wherein said installing the input lines and the output lines comprises forming a through hole in the top plate, passing the input lines and the output lines through the through hole, and sealing the through hole with epoxy resin.

54. The method of claim 52, wherein said installation the input lines and the output lines comprises attaching a terminal unit to the top plate, and connecting the input lines and the output lines to the terminal unit.

55. The method of claim 48, wherein said injecting the oil comprises injecting the oil until a level of the oil is between an upper end of the container and an upper end of the coil of the transformer.

56. The method of claim 48, wherein said injecting the oil comprises injecting the oil until a level of the oil is between an upper end of the core of the transformer and an upper end of the coil of the transformer.

57. The method of claim 48, further comprising preparing the sidewall having an inner surface with at least two points having different distances from a center of the container.

58. The transformer assembly of claim 1, wherein the cooling material is a colloidal material.

59. The transformer assembly of claim 14, wherein the mounting parts respectively comprise fastening portions having screw holes to fasten the container to the microwave oven.

60. The transformer assembly of claim 1, wherein the base plate comprises:

a base part defining a bottom of the container; and

mounting parts outwardly extended from respective ends of the base part beyond the cover body of the container, the mounting parts having screw holes to fasten the mounting parts to the microwave oven.

61. The transformer assembly of claim 1, wherein the container comprises corrugated sidewalls to provide a larger heat dissipating area.